

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A method for fabricating a micro-sensor device comprising the steps of
 - (i) fabricating on a parent substrate (10) at least one sensor element (21),
 - (ii) forming an interconnect layer (32) having first and second surfaces remote to the parent substrate (10) so as to enclose the at least one sensor element (21) between the first surface and the parent substrate,
 - (iii) providing a plurality of electrical interconnections (33) between the at least one sensor element (21) and a plurality of terminations at the second surface of the interconnect layer, said terminations adapted to interface with a readout substrate (38),
 - (iv) providing a readout substrate (38) having a plurality of input connections (40) disposed on a first surface thereof, said input connections (40) arranged so as to substantially correspond with the terminations at the second surface of the interconnect layer (32),
 - (v) interfacing the plurality of terminations with the corresponding input connections (40) to form an integrated assembly, and
 - (vi) removing the parent substrate (10) from the integrated assembly within an area corresponding substantially with the at least one sensor element (21).

2. (Currently amended) A method according to claim 1 wherein the step of interfacing the terminations with the corresponding input connections (40) comprises the step of forming metal connection bonds (34) there-between.

Claim 3. (Cancelled)

4. (Currently amended) A method according to ~~any of the preceding claims_1~~ wherein the readout substrate (38) comprises an integrated circuit.
5. (Currently amended) A method according to ~~any of the preceding claims_1~~ wherein the step of fabricating the at least one sensor element comprises the step of forming the at least one sensor element (21) on the parent substrate (10) so as to impart a crystallographic relationship there-between.
6. (Currently amended) A method according to claim 5 wherein the step of fabricating the at least one sensor element comprises an epitaxial process such that the crystallographic structure of the parent substrate (10) is imparted to the at least one sensor element (21) during said process.
7. (Currently amended) A method according to claim 6 wherein the parent substrate (10) exhibits a substantially single-crystal structure.
8. (Currently amended) A method according to ~~any of the preceding claims_1~~ wherein the step of fabricating the at least one sensor element comprises a heat treatment step.

Claims 9-10. (Cancelled)

11. (Currently amended) A method according to ~~any of the preceding claims_1~~ wherein the step of fabricating the at least one sensor element comprises the step of

depositing onto the parent substrate (10)—one of a resistive thin-film layer and a ferroelectric thin-film layer.

Claims 12-15. (Cancelled)

16. (Currently amended) A method according to ~~any of claims 11 to 15~~ comprising the intermediate step of depositing a buffer layer onto the parent substrate (10) prior to the deposition of the thin-film layer.

Claim 17. (Cancelled)

18. (Currently amended) A method according to ~~any of the preceding claims~~ 1 wherein the step of removing the parent substrate comprises etching the parent substrate (10) using Tetramethyl Ammonium Hydroxide (TMAH).

19. (Original) A method according to claim 18 wherein the Tetramethyl Ammonium Hydroxide etchant is doped with at least one of Silicon and Diammonium Peroxydisulphate.

20. (Currently amended) A micro-sensor device comprising, at least one sensor element (21); an interconnect layer (32) having a first surface facing towards the at least one sensor element (21) and a second surface facing away from the at least one sensor element (21), said interconnect layer (32) having a plurality of electrical interconnections (33) between the at least one sensor element (21) and a plurality of terminations at the second surface of the interconnect layer (32); and a processing or means (38) disposed adjacent the second surface of the interconnect layer (32), said processing or means (38) having a plurality of input connections (40) corresponding substantially with the plurality of terminations and interfaced therewith.

21. (Currently amended) A micro-sensor device according to claim 20 comprising an array having a plurality of thermal detector sensor elements (21).

22. (Currently amended) A micro-sensor device according to claim 21 wherein the thermal detector sensor elements (21) comprise at least one micro-bridge sensor element.

23. (Currently amended) A micro-sensor device according to any of claims 20—22 wherein the sensor elements (21) comprise one of a ferroelectric material and a resistive material having a temperature-dependant resistivity.

Claims 24-27. (Cancelled)

28. (Currently amended) A micro-sensor device according to any of claims 20—27 wherein the at least one sensor element (21) exhibits a substantially single-crystal structure.

29. (Currently amended) A micro-sensor device according to any of claims 20—28 wherein the interconnect layer (32) is electrically non-conductive.

Claims 30-32. (Cancelled)

33. (Currently amended) A micro-sensor device according to any of claims 20—32 wherein the interconnect layer (32) has a thickness of less than 100 μm .

34. (Currently amended) A micro-sensor device according to claim 33 wherein the interconnect layer (32) has a thickness of less than 10 μm .

35. (Currently amended) A micro-sensor device according to claim 34 wherein the interconnect layer (32) has a thickness of less than 5 μm .

36. (Currently amended) A radiation detector having a micro-sensor device according to
any of claims 20–35.